Workshop on Net Zero Energy for Installations and Deployed Bases
3 – 4 February 2009

Take-away Summary of Day 1 Discussions

Tom Hartranft

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Workshop Overview

- Characterize tech portfolios for Net Zero Energy
- Integration opportunities for key technology families
- Consensus tech needs → tech roadmap

Focus → NZE for whole community systems

Key Technology Families

- Renewables
- Thermal & Electrical Energy Storage
- Power & Energy Architecture
- Physical Architecture
- Energy Conservation
- Building Envelope and Materials Sciences
- Tools & Systems Analysis Methodologies

Integration → Integration → Integration

Keynote Speaker Question
Relevant to Army Installations

- Why didn't Freiburg succeed with their 1995 Climate Change Plan … wish and reality
- Built their Plan on only solar
- Hindsight shows that solar cost / CO2 mitigation potential not affordable
- Revised plan expanded to building demand reductions + CoGen + …
- Integrated portfolio of cost / CO2 tech's

Day 1 NZE Community Characteristics

- Whole community system is desired end state
  - On-site distributed energy resources (DERs)
  - Efficient use thermal waste heat from DERs
  - Storage to ‘level out’ renewables intermittencies
  - Blended electrical & thermal architecture
  - Dramatically-reduced building demand
  - Power partnerships with civilian community
- Modular, scalable, affordable, sustainable
- Commonalities … installations & deployed bases

Day 1 Integration Opportunities

- Seamless integration of on-site distributed energy sources with electrical & thermal storage
  - Need codes, standards, protocols, knowledge
- Optimization trade-offs for incremental 2009 – 2030 investments between energy demand reductions, storage, on-site distributed energy sources
  - Need modeling and analysis tools + demos for validation
- Over-arching community electrical & thermal architecture upon which to integrate and optimize the ‘pieces’
  - Need development & field demos of emerging concepts

Day 1 Session Chair Feedback

- Renewables (Andy Walker)
- Thermal & Elect Energy Storage (Dan Rastler)
- Power & Energy Architecture (Bob Lasseter)
- Physical Architecture (Katrin Klingenberg)